

The Age of Spiritual Machines by Ray Kurzweil

Computer capabilities that were thought to be impossible two decades ago, are now emerging today. Computers are used more and more frequently to free humans from everyday mundane tasks. These new technologies are already so widespread, and common in our lives. Computers are used these days to diagnose certain medical conditions, trade stocks, guide cruise missiles, shop online, play games, communicate with others, etc. Walk into any well established business and you will find a computer. Computers and technology, which are so prevalent today, will continue to become more powerful and a larger part of our everyday lives. The possibilities are endless.

“In the next decade, we will see translating telephones that provide real-time speech translation from one human language to another, intelligent computerized personal assistants that can converse and rapidly search and understand the world’s knowledge bases, and a profusion of other machines with increasingly broad and flexible intelligence” (Kurzweil, 4). New technology is likely to sneak up on us, like existing ones have done in the past. In the last century, we have explored space, created weapons of mass destruction, and invented numerous machines from the color television to the automobile. A person living in the previous century would never believe it if you told him that it was possible to travel to the moon, among other things.

Kurzweil explains how intelligent machines are the wave of the future. If current trends continue, machines will become more powerful, and more intelligent. Computers

today can already beat our champions in chess, and compute mathematical problems in fractions of the time it takes a mathematician. With promising advances in artificial intelligence, computers continue to accomplish tasks we never thought possible. Will computers exceed our intelligence? Kurzweil is convinced that they will. He argues that human intelligence is based on neural nets, which are the foundation for skill formation, and most of human thought. Many computers today can use neural net simulations to recognize voice, handwriting, and face patterns.

Knowledge is power. So if machines become more intelligent and acquire more knowledge than us, will they be considered conscious or living? How is consciousness defined? I think therefore I am? Or is it defined by having a soul? The author provides an example of a human named Jack in the future. Lets say Jack loses his hearing, and is able to recover this through a implant that connects to his brain. Do we consider Jack to be the same person? Of course we do. Lets then say Jack loses his sight, gains weight, and is getting old and forgetful. Jack undergoes surgery to regain his sight, lose some weight, and retune his brain to remember better. Is Jack still the same person? We would still consider him the same person with a few changes. This is because to his peers, he appears to be the same person. However, if Jack was to lose his body in a car accident, and technology has allowed him to transfer all the contents of his brain into a new identical body, would we consider Jack Jack? He would still look, think, and act like Jack. My point is this - if intelligent machines with a brain and body similar to ours are a functioning part of society, what is to separate them from us? The author says the machines would argue that they are conscious, and we would believe them. This is because their brain is based on ours. They are able to learn from their experiences and

experience emotions. The question then becomes what rights would artificial beings have if we classified them as sentient beings?

Out of the many societal trends that Kurzweil analyzes, the philosophical debate over the differences between machine and human intelligence is one he foresees extending deep into the future. The implications of this argument are profound. They go much deeper than just civil rights issues with regards to sentient machines. Theological and political issues come into play as well – for instance, whether or not intelligent machines have souls, or whether beings that are either artificial in part or whole should be able to be a part of government. Kurzweil predicts that one of the main tools that society will use to define the differences between machines and humans will be the Turing Test, expanded into many different forms in order to test the range of machine intelligence. As time progresses, he poses that there will essentially be no difference between machine and human intelligence, but does that mean the two are necessarily equivalent in all areas? Can a machine find spirituality? What would it mean for humans to essentially become gods with regards to creating beings like themselves in every way possible, perhaps even better in some respects? For every answer that technology provides, Kurzweil's predictions point out that a million more questions are raised about the ethics and societal issues that arise from that technology.

Perhaps the most important side-effect of creating such highly advanced artificial intelligence is the problem of giving said beings civil rights. In present day society equality amongst human beings alone has been hard to gain, what more when we create machine intelligences that will rival us in physical and mental capacity? Will these machines be merely slaves to humanity, or will we become the slaves to the machines

ourselves. It is not merely science fiction to think that the advancements that we continually make will lead us to confront our own position as human beings. Just as the United States seeks to spread democratic government to the world at large, it is not unlikely to think that we will try and spread humanism to sentient beings as a whole, regardless of whether we create them ourselves or find them amongst the cosmos. As Kurzweil points out, this debate will not merely be amongst ourselves, but also with the machines as well. Artificial intelligence is in the infant stages of its growth towards a full fledged civil rights issue, which would essentially be the culmination of technological progress throughout human history – we will have succeeded in replicating the most complex piece of technology of all, the human being.

How will this all be possible? The author supports his claims by showing current and past trends. Computers are becoming increasingly fast and smaller at a lower unit cost. The author also cites several new and promising technological fields. When computers have reached their peak, other technologies will emerge. Computing can be done with light, DNA, small molecules, or even crystals storing data in holograms. The author gives various examples of studies and research in these fields. Nanotechnology seems to be a promising field. If we are able to achieve the goals of nanotechnology, we would be able to use molecules and atoms, the building blocks of everything on earth, to construct anything that exists in this world. Need a new organ, house, or a new pet? It may be possible for technology to construct these things as quickly as a new computer is made.

A large portion of Kurzweil's text involves looking at technological trends in various fields, decade by decade and going over the effects on humanity through advancements in computers, education, medicine, warfare and the like. With all these new technologies and their positive aspects, we must be cautious. More efficient methods of wrongdoing and more disastrous possibilities will emerge. Why don't we just stop the advancement of technology? Kurzweil says that we cannot. So many things, such as the Human Genome Project, where scientists are almost finished mapping the DNA sequence of human beings, are already underway. Technology will continue to advance, since there will always be people devoted to it. Also, technology has become so ingrained in society that improving ourselves almost invariably means improving technology as well. One of Kurzweil's main points is that we cannot stem the tide of technology, therefore we must embrace and live with the consequences of technological advancements. As the author says in his continuing debate with Molly, who undergoes advancements and upgrades in her lifestyle as a result of advancing technology, "We have the opportunity to shape technology, and to channel its direction."

Kurzweil's continuing debate with Molly throughout the decades (with himself trapped in 1999 speaking to her at different points in her "life" as a sentient being) gives us an opportunity to see technology for what it really is – not just a general tool to help us solve our problems, but also as our creation. Technology is not just the "universal screwdriver," when we create machine intelligences and beings like ourselves we are basically manufacturing friends, lovers, and children. As such we are and will be obligated to face the consequences of our continued integration with technology. As we see from Molly's life as she gets married, has a family, and becomes increasingly

transformed the merger between humans and machines, life experiences are not limited to us alone. Our creations, whether they are literary constructs or artificial intelligences, will have the capability to live and experience the entirety of human existence and then some. As Kurzweil says, we will have plenty of time to answer all the questions that arise from advancing technology, but it is most important right now to ask the right questions. Whether we are human, machine, or some combination thereof, the choices we make in the future with regards to technology will affect us all, so we must be prepared as much as possible for the consequences.